The Mathematical Gazette

EASTERN MICHIGAN UNIVERSITY
MAR 20 2012
HALLE LIBRARY

Index to Volume 95
Numbers 532 to 534
2011

www.m-a.org.uk

THE MATHEMATICAL ASSOCIATION £1

Index

to the

Mathematical Gazette

Vol. 95 2011

NO.	MONTH	PAGES
532	March	1 – 176
533	July	177 – 384
534	November	385 – 576

Editorials	Articles
Notes	Teaching Notes
Feedback	Correspondence
Problem Corner	Student Problems
Matters for Debate	Obituaries
Reviews	Editors

Articles

AUTHOR	TITLE	PAGE
David Acheson	What's the Problem with Maths? (The Presidential Address)	386
Tom M. Apostol and Mamikon A. Mnatsakanian	Sums of squares of integers in arithmetic progression	186
Christopher J. Bradley	Significant points on circles centre the circumcentre	404
Lee Collins and Thomas J. Osler	Law of cosines generalised for any polygon and any polyhedron	240
M. J. Cooker	Fast formulas for slowly convergent alternating series	218
Michael J. Cullinane	Metric axioms and distance	414
Sándor Dobos	Cross ratio in use	444
Stan Dolan	A classification of Kaprekar constants	437
Philip C. Gager and Mark B. Shackleton	A snakes and ladders representation of stock prices and returns	177
Martin Griffiths	A digit function with Thomae-like properties	397
Martin Griffiths	The geometry of a stable game	52
Martin Griffiths and Nick Lord	The hook-length formula and generalised Catalan numbers	23
Bojan Hvala	Diophantine Steiner triples	31

41 206 UM MAG 1426 Group 08/12

AUTHOR	TITLE	PAGE
G. J. O. Jameson	Finding Carmichael numbers	244
G. J. O. Jameson	Finding pseudoprimes	420
A. D. Keedwell	Gaston Tarry and multimagic squares	454
A. J. MacFarlane	The Morley tricorn – a solid figure constructed from the diagram for Morley's theorem	49
Thomas J. Osler	Morphing Lord Brouncker's continued fraction for π into the product of Wallis	17
Thomas J. Osler	Euler's parallel oblique-angled diameters	40
A. C. Paseau	Family planning	213
Juan Pla	Some remarks about a formula of Charles Dodgson	235
Christopher J. Sangwin	Limit-free derivatives	469
John Sharp, B. G. Nickel and J. L. Hunt	Anamorphoscopes – another look at circle inverting mirrors	1
Shailesh A. Shirali	A generalisation of the arbelos theorem of Archimedes	197
Shailesh A. Shirali	Triangles with one angle equal to 60 degrees	227
Daniel Shiu and Peter Shiu	A lower bound for the prime counting function	433
Peter Shiu	Finding a missing digit	206
Li Zhou	Irrationality proofs à la Hermite	407

Correspondence

AUTHOR	TITLE	PAGE
Mark J. Cooker	Corrections to his article	560
K. Robin McLean	The OSS congruence condition	358
John Mahony	Comment re 'Matter for Debate'	561

Feedback

March pp. 128-132	Alan Beardon	Bob Burn	Mike Hirschhorn (4)
July pp. 359-361	Michael de Villiers	Nick Lord (2)	Douglas W. Mitchell
November pp. 557 -559	John Chick	Douglas W. Mitchell	

Notes

March	95.01 – 95.20
July	95.21 – 95.48
November	95.49 – 95.68

AUTHOR	NO.	TITLE	PAGE
Roy Barbara	95.01	The rational distance problem	59
Alan F. Beardon	95.20	Integral inequalities in probability theory	119
Iliya Bluskov	95.46	Powers ending in 00...01	342
C. J. Bradley	95.16	The generalisation of the triplicate ratio circle	110
M. Chaves	95.23	Twin primes and a primality test by indivisibility	266
W. J. A. Colman	95.05	Measuring the radius of the Earth	72
W. J. A. Colman	95.52	A note on prime numbers	497
Michael de Villiers	95.14	Equiangular cyclic and equilateral circumscribed polygons	102
Stan Dolan	95.24	Fermat's method of "descente infinie"	269
Bianca Edwards and Jim Hartman	95.28	Powers of magic matrices	284
Russell Euler and Jawad Sadek	95.53	A formula for all K-gonal numbers that are centred K-gonal	501
N. Gauthier	95.50	Fractional-power identities for Fibonacci and Lucas polynomials and numbers	486
Chinmoy Kumar Ghosh	95.17	The golden ratio in conic sections	113
Martin Griffiths	95.27	Symmetric rational expressions in polynomial sequences	279
C. W. Groetsch	95.19	Spurt optimization	118
Mowaffaq Hajja	95.45	What do permutations of a given cycle pattern generate?	341
Michael D. Hirschhorn	95.02	Commensurable triangles	61
Michael D. Hirschhorn	95.08	Maximisation/minimisation without calculus	83
Michael D. Hirschhorn	95.11	An interesting integral	90
Michael D. Hirschhorn	95.35	A surprising appearance of $\zeta(3)$	313
Michael D. Hirschhorn	95.40	Lord Brouncker's continued fraction for π	322
Michael D. Hirschhorn	95.55	When is the sum of consecutive squares a square?	511
Michael D. Hirschhorn	95.57	A triangle-folding problem	514
Michael D. Hirschhorn	95.61	Tenth order algorithms for calculating $\sqrt{2}, \sqrt[3]{3}$	526
Terence Jackson	95.42	Irrational square roots of natural numbers — a geometrical approach	327
Andrew K. Jobbings	95.15	Proofs by dissection of a dodecagon	107
Andrew K. Jobbings	95.64	Two semicircles fill half a circle	538
C. Johnson	95.26	Nice cubics	273

AUTHOR	NO.	TITLE	PAGE
Jeremy D. King and Nick Lord	95.68	The mechanics of sliding down curves	549
Reginald Koo	95.03	Geometric enumeration of the rationals between any two rational numbers	63
Thomas Koshy	95.63	Central binomial coefficients and Catalan congruences	533
Thomas Koshy and Zhenguang Gao	95.13	Some divisibility properties of Catalan numbers	96
Mitsuhiro Kumano	95.38	An extension of a certain inequality in the 24th IMO	320
C.-S. Lin	95.66	The reciprocal volume of a Heron tetrahedron	542
Paul Loomis	95.54	Two results on sums of cubes	506
Nick Lord	95.36	Sequences of averages revisited	314
Nick Lord	95.37	An instructive application of the inequality of means	317
Nick Lord	95.39	A UKMT Senior Mathematical Challenge problem: frustration leads to joy!	322
Nick Lord	95.44	Newton tackles an Olympiad problem	334
Des MacHale	95.25	Goldbach variations	271
Panakkal Mathew and Imre Patyi	95.10	The fundamental theorem of calculus implies that of algebra	88
Ognjen Milatovic	95.21	A property of odd terms of a generalised Fibonacci sequence	262
Robin Murphy	95.12	Accelerating the convergence of some alternating series	91
Robin V. W. Murphy	95.33	Integrating $\int_0^{\infty} \frac{\lvert\sin^a x \cos^b x\rvert}{x^p}\,dx$	307
Robin Murphy	95.62	Numerical integration on a spreadsheet	528
R. W. D. Nickalls	95.60	A new bound for polynomials when all the roots are real	520
Pratik Patel and Robert Underwood	95.43	On convex quadrilaterals	330
Juan Pla	95.07	Series for π ln k and some other mathematical constants	78
Juan Pla	95.51	On a multigrade congruence	494
C. W. Puritz	95.04	Make your own log table!	66
Andrew M. Rockett and Joseph P. Ruggerio	95.30	On Stråhle's guitar frets	300
Norman Routledge	95.49	Generalised Fibonacci Properties	483
J. A. Scott	95.06	The harmonic series revisited	77
J. A. Scott	95.18	Normals to the Euler line	115
J. A. Scott	95.58	On infinite series over the primes	517
J. A. Scott	95.59	Another series for the inverse tangent	518

AUTHOR	NO.	TITLE	PAGE
Shailesh A. Shirali	95.09	A bootstrapping proof of the AM-GM Inequality for three variables	86
Stuart Simons	95.48	Balls and walls – how energy can be lost in elastic collisions	349
Stuart Simons	95.67	SHM on a rough surface	545
Ondrej Šuch	95.29	The order of elements in SL (2, p)	292
Aidan Sudbury	95.65	Vectors and the nine-point circle	540
Hung-Ping Tsao	95.47	Sums of powers and Eulerian numbers	347
Mark B. Villarino	95.56	Burning mirrors on opening day	512
Marcus Wright and Thomas J. Osler	95.41	An interesting generalisation of the half-angle formulas to complex numbers	327
Robert M. Young	95.31	$\int_0^\infty \frac{1}{1+x^2}\,dx = \frac{\pi}{2}$: A proof without trigonometry	304
Robert M. Young	95.32	$\int_0^1 \frac{1}{1+x^2}\,dx = \frac{\pi}{4}$: an elementary proof	304
Robert M. Young	95.34	On evaluating the probability integral	311
Alberto Zorzi	95.22	Benford's law and π	264

Teaching Notes

Peter G. Brown	Rays in a right triangle	126
Colin Foster	A comment on Schnell and Mendoza	357
Nick Lord	The confusion between inverse and reciprocal functions	124
Nick Lord	Proof without words that $2 < e < 3$	125
Nick Lord	Reflection paths with restitution	354
Nick Lord	Binomial modes	356
Nick Lord and Alex Yan	A difference in the behaviour of moments of inertia and variance	556
Osvaldo Marrero	One equals zero: a specious argument	554
Stuart Simons	Constant acceleration revisited	553

Matter for Debate

AUTHOR	TITLE	PAGE
Martin Griffiths	Is trigonometry the preserve of the mathematical élite?	256

Miscellaneous

Sixteenth Annual *Mathematical Gazette* Writing Awards 212

Acknowledgements 575

Reviews

AUTHOR	TITLE	REVIEWER	PAGE
Edwin A. Abbott, William F. Liindgren and Thomas F. Banchof	Flatland: an edition with notes and commentary	*Michael Ward*	381
John Adam	A mathematical nature walk	*Mary Fortune*	379
Colin Adams	Riot at the calc. exam and other Mathematically Bent stories	*Nick Lord*	155
William J. Adams, Irwin Kabus and Mitchell P. Preiss	Statistics: basic principles and applications (2nd edn.)	*Peter Hall*	145
Donald J. Albers and Gerald L. Alexanderson (eds.)	Mathematical people: profiles and interviews (2nd edn.)	*Paul Hudson*	147
Amir Alexander	Duel at dawn: heroes, martyrs and the rise of modern mathematics	*Peter Giblin*	146
John Barnes	Gems of geometry	*Gerry Leversha*	162
Penelope Bidgood, Neville Hunt and Flavia Joliffe (eds.)	Assessment methods in statistical education: an international perspective	*Peter Hall*	373
Gregory Chaitin	Meta maths: the quest for omega	*Paul Hudson*	377
Tony Crilly	The big questions: mathematics	*Gerry Leversha*	379
Amy Dahan-Dalmedico and Jeanne Peiffer	History of mathematics: highways and byways	*Charles Eaton*	149
Jean-Marie De Koninck	Those fascinating numbers	*Martin Griffiths*	156
Erik D. Demaine, Martin L. Demaine, and Tom Rodgers (eds.)	A lifetime of puzzles: A collection of puzzles in honor of Martin Gardner's 90th birthday	*Alan Sutcliffe*	174
Diarmuid Early and Des MacHale	Superbrain: the first twenty-five years	*Gerry Leversha*	171
Hidetoshi Fukagawa and John Rigby	Traditional Japanese mathematics problems	*Gerry Leversha*	159
Hidetoshi Fukagawa and Tony Rothman	Sacred mathematics	*Gerry Leversha*	159
Martin Gardner	Origami, Eleusis, and the Soma cube: Martin Gardner's mathematical diversions	*Alan Sutcliffe*	174
Helge Holden and Ragui Piene (eds.)	The Abel prize 2003 - 2007: The first five years	*Graham Hoare*	375
O. A. Ivanov	Making mathematics come to life: a guide for teachers and students	*Nick Lord*	372
Pl. Kannappan	Functional equations and inequalities with applications	*Peter Shiu*	160

AUTHOR	TITLE	REVIEWER	PAGE
Ulrich Kortenkamp	Cinderella (Version 2): Interactive geometry package	*Peter Giblin*	573
Jayne Kranat	Statistics GCSE for AQA: (2nd edn.)	*Martin Griffiths*	144
Mark Levi	The mathematical mechanic	*Charlotte Anderson*	165
Colin McGregor, Jonathan Nimmo and Wilson Stothers	Fundamentals of university mathematics (3rd edn.)	*Peter Giblin*	570
Fiona Mapp	Essentials: KS3 mathematics coursebook	*Peter Hall*	144
T. S. Michael	How to guard an art gallery: and other discrete mathematical adventures	*Martin Griffiths*	572
David S. Moore, George P. McCabe, Bruce A. Craig	Introduction to the practice of statistics	*Piotr Zarzycki*	380
Kim Plofker	Mathematics in India	*S. C. Coutinho*	152
Jason Rosenhouse	The Monty Hall Problem – the remarkable story of math's most contentious brainteaser	*John Baylis*	167
Alexander Soifer	The mathematical colouring book: mathematics of colouring and the colourful life of its creators	*Nick Lord*	163
Alexander Soifer	Mathematics as problem solving (2nd edn.)	*John Baylis*	171
Ian Stewart	Professor Stewart's hoard of mathematical treasures	*Gerry Leversha*	172
Ian Stewart	Cows in the maze and other mathematical explorations	*Anne Haworth*	382
George G. Szpiro	A mathematical medley: fifty easy pieces on mathematics	*Martin Griffiths*	173
William J. Terrell	Stability and stabilization: an introduction	*P. MacGregor*	166
Owen Toller	The mathematics of A-level statistics	*Nick Lord*	383
Glen van Brummelen	The mathematics of the heavens and the earth: The early history of trigonometry	*P. N. Ruane*	150
Vlatko Vedral	Decoding reality: the universe as quantum information	*Michael Ward*	151
Valery V. Volchkov and Vitaly V. Volchkov	Harmonic analysis of mean periodic functions on symmetric spaces and the Heisenberg group	*Dave Applebaum*	571
Robert A. Wilson	The finite simple groups	*Peter Shiu*	157
David Wright	Mathematics and music	*Gerry Leversha*	154
Alexander Zawaira and Gavin Hitchcock	A primer for mathematics competitions	*Michael de Villiers*	169

Student Problems

Numbers	2010 – 5 & 6	2011 – 1 & 2	2011 – 3 & 4	2011 – 5 & 6
Statement	**94** p. 551	**95** p. 142	**95** p. 369	**95** p. 568
Solutions	**95** pp. 142-143	**95** pp. 369-371	**95** pp. 568-569	

Problem Corner

Numbers	**94** E, F, G, H	**94** I, J, K, L	
Statement	**94** pp. 342-343	**94** p. 544	
Solution	**95** pp. 133-141	**95** pp. 363-368	
Numbers	**95** A, B, C, D	**95** E, F, G, H	**95** I, J, K, L
Statement	**95** p. 133	**95** p. 362	**95** p. 562
Solution	**95** pp. 563-567	**96**	**96**

Cover Pictures

	Image	*From*
March	The Morley tricorn	The Morley tricorn – a solid figure constructed from the diagram for Morley's theorem
July	Snakes and Ladders	A snakes and ladders representation of stock prices and returns
November	Gaston Tarry	Gaston Tarry and multimagic squares

The 2011 *Gazette* editorial team

Editor	Dr Gerry Leversha
Production Editor	Mr Bill Richardson
Reviews Editor	Dr Martin Griffiths
Problem Corner Editor	Mr Nick Lord
Student Problem Corner	Mr Tim Cross, Dr Stan Dolan
Assistant Editor	Mr Tom Roper
Proofreaders	Mr Colin Davis, Mr Michael Fox
	Dr Andrew Jobbings, Professor Adam McBride

Thanks to Richard Kirby for his help in checking this index.